CSP Water Quality Eligibility Tool
For Cropland Applications

December 2005

Background

For the next CSP sign-up a new water quality eligibility tool will be available to assess the offered acres of a producers operation and ensure that nutrient, sediment, pest and salinity resource concerns are addressed in a consistent manner. In the past, water quality has been addressed variably across the country. This tool will ensure water quality issues are looked at consistently and minimum thresholds are met. By simply answering yes or no to a series of questions all CSP applicants will be assessed equally using the same tool across the country. When all of the answers are complete, a clear determination of CSP eligibility based on water quality will be displayed.

The approach adopted accounts for multiple management activities that protect and enhance water quality on the farm. Each conservation measure contributes to a cumulative index score defined by the CSP water quality concerns (nutrient, sediment, pest and salinity). There are many conservation measures and they may contribute to each of the water quality concern index scores. For example, the conservation measure of cover crops contributes to every water quality index category. Thus measures that are more effective are weighted higher than measures that are focused on a single water quality issue.

Each of the constituent water quality concerns (nutrient, sediment, pest and salinity issues) requires a minimum index score for the producer to be eligible for CSP. There are many conservation measures that may be applied on an agricultural operation. Not all of these measures must be applied to meet the minimum threshold score for each resource concern. In other words there are many ways to combine and uniquely apply conservation measures that would add up to the minimum thresholds needed to meet basic eligibility. This was specifically designed into the tool to address the variability found in agricultural operations, the environment, soils, etc. Different suites of conservation measures, focusing on protecting water quality, will meet the CSP thresholds in different combinations. Thus providing the American Farmer the flexibility to meet water quality resource concerns on their operation site specifically yet assessed consistently.

The CSP Water Quality Eligibility tool was created by a panel of agency experts. This team together assigned index values to each conservation measure for each of the CSP water quality concern categories. The tool was further reviewed and tested by NRCS employees from around the country.

The tool is a spreadsheet based tool and will easily run in the CCE environment. If you have any questions or comments please contact Shaun P. McKinney with the Water Quality and Quantity Team in the West National Technology Support Center at (503) 273-2413.

The CSP Water Quality Eligibility Tool answers the basic question "Does the producer address the minimum water quality resource concerns outlined in the CSP legislation?" It is not a planning tool. The tool has been likened to taking the vital signs of a patient. It is a broad overview to determine if a patient is healthy or not. Further tests and procedures exist to delve deeper into specific questions with great detail (e.g. MRI, or blood tests). In much the same way, NRCS has more detailed planning tools, such as the P-Index, WIN-PST and NLeap. The Water Quality Tool was designed to take a national overview of conservation measures addressing water quality and use those results to determine if producers are meeting the minimum requirements of CSP.

Every state has water quality standards on nutrient rates, conservation requirements such as soil tests and buffers, as well as varying state water quality regulations. In most cases these vary from state to state. These standards, requirements and regulations are all rooted in appropriate conservation stewardship. In the process of implementing a national conservation program like CSP a tool was required that assessed producers with a common yardstick. Thus, the Water Quality Tool was created to meet this need. The conservation measures within the tool will not necessarily match state quality criteria. For example, the tool asks if producers have buffers at least 25 feet wide. There are some states with local laws requiring 100 foot buffers, and at the same time there are states that only require 25 foot buffers.

Completing the Water Quality Tool does not advocate nor endorse stream buffers that are wider or shorter than state law or local NRCS Conservation Practice Standards. The tool will allow the best stewards to document that they are addressing water quality resource concerns. It simply allows the consistent implementation of a nation-wide program with minimum requirements for water quality. There may be situations where producers following local NRCS Practice Standards (e.g. 590) will not be able to affirmatively mark the questions on conservation measures required by the water quality tool. Regardless of the answers to individual questions, the tool should discern producers addressing water quality issues from those that need to do more.

Scale to apply the Tool

The CSP Water Quality Eligibility Tool will be applied and run for the acres that are offered by the producer for the program. The intent is to NOT apply the tool on a field by field basis. Each statement should be interpreted as asking the question "Is _____ (management activity) applied on your offered acres?" A check in the box indicates an affirmative answer. The tool can be used iteratively on different configurations of fields or potential CSP offered packages. The eligibility question must be true on all acres to be able to check the box affirmatively. For example all streams must have 20 foot buffers to check question 8 yes.

Documentation

The producer should have appropriate records available at the interview. The following are examples of appropriate records and documentation:

1) Nutrient Management Plan that includes one or more of the following:
   - Realistic crop yield goal,
   - Soil test results,
   - Previous crop credits,
   - Leguminous crop credits,
   - Manure application history, and/or
   - Leaf tissue analysis (if appropriate).

2) Pest Management Plan:

3) Other records should include:

   Crop type,
   Projected
   yields,
   Soil analyses,
   Dates and application rates of all nutrients used,
   Weather conditions at application.

   Records should also include the target pest, crop type and type of pesticides used, dates and application rates or the cultural or biological control method(s) used and dates implemented, including spot treatments.

The following is a narrative of the questions and additional guidance to be used to fill out the CSP Water Quality Eligibility Tool.

Management Activities

1. **No Surface Water Transport from Field. This applies to low rainfall areas (< 14 inches) where most of the water needed for crop production comes from high efficiency irrigation that produces no surface runnoff.** Does not include flood or furrow irrigation.

2. **No Pesticides Used (This triggers a pass for pesticides).** Includes organic farming operations that do not use pesticides.

3. CHOOSE ONE (1) Integrated Pest Management CHOICE BELOW - IF NONE APPLY CHECK HERE.

- **(Choice A) A full Integrated Pest Management system is not yet implemented, but one or more IPM management techniques that are appropriate for the crop and site are utilized on a regular basis. Integrated Pest Management - IPM includes a wide array of crop and site specific prevention, avoidance, monitoring, and suppression management techniques.**

  Prevention - Preventing pest populations (e.g., using pest-free seeds and transplants, cleaning tillage and harvesting equipment between fields, and scheduling irrigation to avoid situations conducive to disease development, etc.).

  Avoidance - Avoiding pest impacts (e.g., using pest-resistant varieties, crop rotation, trap crops, etc.).

  Monitoring - Identifying the extent of pest populations and/or the probability of future populations (e.g., pest scouting, soil testing, weather forecasting, etc.).

  Suppression - Suppressing a pest population or its impacts using cultural, biological, or chemical pest controls.

  Note: Guidance on appropriate IPM management techniques is available from Cooperative Extension.

- **(Choice B) A basic Integrated Pest Management system with scouting and economic thresholds is used to manage pests and reduce pest management environmental risk. A basic IPM system utilizes pest suppression techniques (including pesticide applications) only after monitoring (including pest scouting) verifies that a pest population has reached an economic threshold.**

  An economic threshold is the number of pests (weeds, insects, diseases, etc.) per some unit (square foot, plant, feet of row, etc.) that, if left uncontrolled, will soon increase to levels high enough to cause economic injury that is equal to the cost of suppression.

  Pest management environmental risk is reduced by applying mitigation techniques. Mitigation techniques include both IPM management techniques, such as timing pesticide application to avoid heavy rainfall, and Conservation Practices, such as a Constructed Wetland that captures

pesticide residues and facilitates their degradation. Appropriate mitigation techniques may be selected based on environmental risk evaluation with tools like the NRCS Windows Pesticide Screening Tool (WIN-PST).

Note: Guidance on basic IPM systems is available from Cooperative Extension.

- **(Choice C) A high level IPM system with pesticides applied only as a last resort is used to manage pests and reduce pest management environmental risk. A high level IPM system goes beyond a basic IPM system by relying primarily on prevention and avoidance management techniques (see definitions in Choice 1 note). When pest suppression is necessary, chemical controls are generally used only when cultural and biological controls have proven inadequate.**

  Pest management environmental risk is reduced by substituting cultural and biological management techniques for pesticides whenever possible, and applying other appropriate mitigation techniques. Mitigation techniques include both IPM management techniques and Conservation Practices.

  Appropriate mitigation techniques may be selected based on environmental risk evaluation with tools like the NRCS Revised Universal Soil Loss Equation 2 - RUSLE2 (for evaluating the use of tillage for weed control) and the NRCS Windows Pesticide Screening Tool - WIN-PST (for evaluating the use of last resort pesticides).

  Note: Guidance on high level IPM systems is available from Cooperative Extension.

4. **Partial Treatment by spot treatment, banding, or directed spraying to reduce amount of pesticide applied. This can be in addition to other IPM choices above**.

5. **Perennial streams, ponds and lakes are bordered with vegetated buffers at least 20 feet wide. For flooded rice and cranberry fields, dikes that are at least 20 feet wide can substitute for vegetated buffers.**

6. **When applying pesticides, maintain a minimum setback distance of 33 feet between the application area and intermittent streams/ditches, perennial streams, ponds/lakes, surface water inlets and open sink holes.** Application rates for liquid manure do not exceed the Available Water Capacity of the soil. Winter manure application is limited to daily haul.

7. **When applying manure, maintain a minimum setback distance of 33 feet between the application area and intermittent streams/ditches, perennial streams, ponds/lakes, surface water inlets and open sink holes.** Application rates for liquid manure do not exceed the Available Water Capacity of the soil. Winter manure application is limited to daily haul.

8. **A minimum of 30% surface residue cover remains after planting annual crops on 2/3 or more of the rotation; OR, Hay/Pasture is more than 1/2 of the rotation.** Applies to a cropping system where 30% surface cover is maintained after planting for 2/3's or more of the crops planted during the rotation; OR, the other option is that hay or pasture make up 1/2 or more of the rotation.

9. **In an annual cropping system, no crop is grown more than two consecutive years. In a perennial based cropping system no single annual crop makes up more than 1/2 of the rotation.** Two or more crops (within a 3 yr period) are included in the rotation to improve crop diversity for soil health, pest management, and erosion control.

10. **Erosion is controlled in the concentrated flow areas.** Ephemeral and gully erosion is stabilized.

11. **Conservation measures (such as, crop rotation, residue management, contouring, and buffers) are maintained to reduce erosion and minimize sediment from entering intermittent streams/ditches, perennial streams, ponds/lakes, surface water inlets and open sink holes.** A system of practices are applied and maintained to reduce erosion and minimize sedimentation and transport of sediment to surface waters. Practices may include: crop rotation, residue management, contour farming, contour buffers, grassed waterways, water and sediment control basins, terraces, strip cropping, cover crops, filter strips, vegetative buffers.

12. **CHOOSE ONE (1) NITROGEN CHOICE BELOW - IF NONE APPLY, CHECK HERE**

    - **(Choice A) Most nitrogen (manure or fertilizer) is applied at or close to planting.** Greater than 75% of the crop nitrogen requirement, as determined by the nutrient management plan, is applied at or within 30 days of crop planting.

    - **(Choice B) Most nitrogen (manure or fertilizer) is applied as a sidedress or foliar.** Greater than 75% of the crop nitrogen requirement, as determined by the nutrient management plan, is applied as sidedress after crop / plant emergence at the appropriate growth stage. This also applies to split application of nitrogen on hayland or hay fields and foliar applications.

- **(Choice C) No nitrogen is ever applied (manure or fertilizer) this triggers a pass for nitrogen.** No manure or fertilizer nitrogen is applied to the crop / plant. The entire source of nitrogen for plant growth comes from carryover of N from leguminous plants (previous crop or cover crop), N fixation, rainfall, and soil O.M.

13. **Where nitrogen is applied (manure and/or fertilizer), the rate is based on a nutrient management plan.** A nutrient management plan provides recommendations or procedures to determine the amount, form, placement and timing of plant nutrients to obtain optimum yields while minimizing the risk of surface and ground water pollution. The procedure used to determine nutrient recommendations should be based on one or more of the following:
    - Realistic crop yield goal,
    - Soil test results,
    - Previous crop credits,
    - Leguminous crop credits,
    - Manure application history, and/or
    - Leaf tissue analysis (if appropriate).

    The nutrient management plan should address all sources of nutrients.

14. **Cover crops are utilized or permanent vegetation is established between rows such as orchards and vineyards.** Cover crops include grasses, legumes, forbs, or other herbaceous plants established for seasonal or perennial cover to:
    - Reduce erosion from wind and water.
    - Sequester carbon in plant biomass and soils to increase soil organic matter content.
    - Capture and recycle excess nutrients in the soil profile.
    - Promote biological nitrogen fixation.
    - Increase biodiversity.
    - Weed suppression.
    - Provide supplemental forage.
    - Soil moisture management.
    - Reduce particulate emissions into the atmosphere

15. **Where applicable, nitrogen and phosphorus credits from manure, irrigation water, previous crop, and soil O.M. are calculated from analyses or book values and used to plan nutrient application rates.** Where applicable, both nitrogen and phosphorus credits from the following sources are calculated using laboratory analyses of soil or manure (or book values) and used to plan nutrient applications rates:
    - ° current and prior year's) manure applications,
    - ° irrigation water applied during the growing season,
    - ° previous crop including legume or cover crop,
    - ° and soil OM.

16. **Soil Tests are taken at least once every 5th year.** Soil samples analyzed by a recognized land grant university or private laboratory using methods approved by the land grant university for the purposes of determining amounts of nutrients needed for crop / plant production. Producer needs to demonstrate the use of soil tests to plan nutrient application rates.

17. **No Phosphorus (excluding starter) is applied where soil test indicate a "very high or excessive" rating.** When soil tests results that are analyzed by a recognized land grant university or private laboratory for the purposes of determining amounts of nutrients needed for crop / plant production indicate that phosphorus levels are in the "very high" or "excessive" or "above optimum" rating category (regardless of P extraction method), no phosphorus is applied with the exception of up to 25 lbs/acre of P2O5 as starter fertilizer at time of planting.

18. **No phosphorus is applied via fertilizer, manure, biosolids, or other amendments.** No phosphorus is applied at any time in any form.

19. **Phosphorus (manure or fertilizer) is injected or incorporated at least 2 inches deep within 24 hours; or applied on 80% surface residue cover or 80% crop canopy cover according to soil test requirements.**

20. **No Salinity Concern (This triggers a pass for Salinity).**

21. **Saline recharge and discharge areas have been identified.** Acceptable methods of identifying saline seep recharge areas include soil maps and geologic information, soil moisture probes and test holes, and visual inspections. Visual assessments and electrical conductivity measurements are acceptable methods of identifying discharge areas. Visual indicators of discharge areas include vigorous weed growth, salt crystals on the soil surface, lodging of the crop and prolonged soil wetness.

22. **For saline seeps, high water use crops/vegetation or the cropping pattern has been changed to manage or minimize salinity in ground or surface water.** An example of high water use crops/vegetation is planting alfalfa in the recharge area Using a flexible cropping system where planting decisions are based on available moisture is an example of a cropping pattern change.

23. **Irrigation water is managed to minimize salt delivery to surface and ground water.** Irrigation water is managed to meet the crop needs with minimal deep percolation and surface runoff.

Special Crops

Completing the CSP Water Quality Eligibility Tool is required for all cropland, permanent hayland, horticultural cropland, orchards and vineyards. It is also required to be completed for specialty crops. Some of these products such as "sugar bush" operations require specific directions to be appropriately applied. For sugar bush, ginseng and similar specialty crops where neither pesticides nor nutrients are applied questions 2, 12c, and 18 should be checked. This will result in "pass" marks for pesticide and nutrients concerns. Surface water sediment concerns as well as salinity concerns must be addressed to fully pass the minimum water quality resource issues.

The CSP Water Quality Eligibility Tool presents a single, consistent approach to help determine CSP eligibility. The tool will help streamline the process and provide comparable results across the country. CSP represents a new chapter in a long legacy of conservation for our agency. Conserving and protecting water quality is at the very roots of CSP and American agriculture.